

Fall 2010  
MA 22400 – Topics List

### Functions of One Variable

#### I. Finding definite and indefinite integrals using integration by parts

- Both given the definite/indefinite integral and in word problems

#### II. Evaluating improper integrals

- Given the improper integral

#### III. Numerical integration using the trapezoidal rule

- Both given the definite integral and  $n$ , and in word problems

### Functions of Two Variables

#### I. Introduction to functions of two variables

- Evaluating given a point
- Finding the domain
- Sketching level curves

#### II. Partial derivatives

- Finding first order partial derivatives
- Evaluating a partial derivative at a given point
- Finding second order partial derivatives
- Finding the derivative using the chain rule

#### III. Applications of partial derivatives

- Determining substitute and complementary commodities
- Finding the rate of change in word problems
- Using marginal analysis to estimate the change in a function
- Using incremental approximation to estimate the change in a function (note – the text instructions in these problems says to “use calculus to estimate” the change)

#### IV. Optimizing functions of two variables

- Finding and classifying critical points given a function